AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A control valve body comprising:

an inlet having an inlet passage;

a nozzle area in fluid communication with the inlet passage, the nozzle area having a sloped nozzle throat and ~~a~~ an uninterrupted annular converging contoured restriction upstream of the sloped nozzle throat, the sloped nozzle throat having surfaces tangent to a direction of fluid flow to inhibit flow separation; and

an outlet in fluid communication with the sloped nozzle throat.

2. (Currently Amended) The valve body of claim 1 wherein the outlet has a diffuser that is shaped such that the area gradient of the diffuser increases from an initial start position near the sloped nozzle throat to a maximum value and drops to near zero at a boundary of the outlet.

3. (Currently Amended) The valve body of claim 1 wherein an inner diameter of an initial start position is smaller than the inner diameter of the sloped nozzle throat, the initial start position being downstream of the sloped nozzle throat.

4. (Previously Presented) The valve body of claim 1 wherein the outlet has an outlet flange and the diffuser extends beyond the outlet flange.

5. (Currently Amended) The valve body of claim 1 wherein the converging contoured restriction is shaped such that the area gradient of the converging contoured restriction starts at near zero and becomes increasingly negative as the converging contoured restriction nears the sloped nozzle throat.

6. (Original) The valve body of claim 1 wherein the inlet passage has a curved flow path.

7. (Original) The valve body of claim 6 wherein a cross-section of the inlet passage is shaped such that the radius of curvature measured orthogonal to flow direction is smaller on the side of the flow path that has a smaller radius of curvature measured parallel to

the flow direction than the side of the flow path that has a larger radius of curvature measured parallel to the flow direction.

8. (Original) The valve body of claim 6 wherein a cross-section of the inlet passage has an approximately elliptical shape.

9. (Original) The valve body of claim 1 wherein the inlet is adapted to connect to an inlet pipe having a cross-sectional area and wherein the inlet passage has a cross-sectional area at a location adjacent the inlet that is smaller than the cross-sectional area of the inlet pipe.

10. (Previously Presented) The valve body of claim 9 wherein the inlet passage starts adjacent to the inlet pipe, the inlet passage configured to generate a flow path that is eccentric to the inlet pipe, the flow path immediately adjacent to the inlet pipe being as far away as possible from an outlet flange.

11. (Original) The valve body of claim 1 further comprising a valve needle adaptable to move between a closed position and an open position, the valve needle having a nearly cylindrical area upstream of an axial location where the valve needle begins to taper to provide the flow versus stroke characteristic of the valve body.

12. (Original) The valve body of claim 11 wherein the nearly cylindrical area has a length to diameter ratio of one of less than one and approximately equal to one.

13. (Currently Amended) The valve body of claim 11 wherein the valve needle has one of a conical step and a spherical step in the outside diameter of the valve needle, the one of the conical step and the spherical step adapted to contact the sloped nozzle throat to provide tight shutoff of gas flow in a fully closed valve position.

14. (Original) The valve body of claim 11 wherein the valve needle has a valve stem and the wherein the valve stem has a diameter that is smaller than the diameter of the nearly cylindrical area at a position upstream of the nearly cylindrical area.

15. (Original) The valve body of claim 14 further comprising a tapered transition between the valve stem having a smaller diameter and the nearly cylindrical area.

16. (Original) The valve body of claim 1 further comprising an outward step in the converging contoured restriction for allowing a mismatch between machining operations.

17. (Currently Amended) A valve comprising:

an inlet having an inlet passage;

a nozzle area in fluid communication with the inlet passage, the nozzle area having a sloped nozzle throat, the sloped nozzle throat having surfaces tangent to a direction of fluid flow to inhibit flow separation;

an outlet in fluid communication with the sloped nozzle throat; and

a valve needle adaptable to move between a closed position in contact with the sloped nozzle throat and an open position away from the sloped nozzle throat, the valve needle having a nearly cylindrical area upstream of an axial location where the valve needle begins to taper in a direction from upstream to downstream to provide the flow versus stroke characteristic of the valve body.

18. (Original) The valve of claim 17 wherein the nearly cylindrical area has a length to diameter ratio of one of less than one and approximately equal to one.

19. (Original) The valve of claim 17 wherein the fuel inlet is orthogonal to the fuel outlet.

20. (Currently Amended) The valve of claim 19 wherein the inlet passage is curved, thereby forcing inlet flow to the sloped nozzle throat in a more uniform manner.

21. (Currently Amended) The valve of claim 20 wherein the curved flow path and a ~~the~~ converging contoured restriction are adapted to prevent flow from separating along the inlet passage and to provide a relatively thick boundary layer at the nozzle throat.

22. (Currently Amended) The valve of claim 17 further comprising a converging contoured restriction upstream of the sloped nozzle throat, the converging contoured restriction being shaped such that the area gradient starts slightly negative and becomes increasingly negative closer to the sloped nozzle throat.

23. (Original) The valve of claim 22 wherein the area gradient is shaped in a manner such that the area gradient is such that the converging contoured restriction initially curves inward and then outward.

24. (Currently Amended) The valve body of claim 17 wherein the valve needle has one of a conical step and a spherical step in the outside diameter of the valve needle, the one of the conical step and the spherical step adapted to contact the sloped nozzle throat such that a tight shutoff is provided when the valve needle is at a fully closed position.

25. (Original) The valve body of claim 17 wherein the valve needle has a valve stem that has a diameter that is smaller that the diameter of the nearly cylindrical area such that vorticity of flow that passed by the valve stem to a side opposite the inlet passage is minimized.

26. (Original) The valve body of claim 25 further comprising a tapered transition between the valve stem having a smaller diameter and the nearly cylindrical area.

27. (Currently Amended) A valve comprising:

an inlet adapted to connect to an inlet pipe, the inlet having a curved inlet passage having a cross-sectional area that is smaller than the inlet pipe cross-sectional area;

a nozzle area in fluid communication with the curved inlet passage, the nozzle area having a sloped nozzle throat, the sloped nozzle throat having surfaces tangent to a direction of fluid flow to inhibit flow separation;

an outlet in fluid communication with the sloped nozzle throat; and

a valve needle adaptable to move between a closed position in contact with the sloped nozzle throat and an open position away from the sloped nozzle throat, the valve needle having a nearly cylindrical area upstream of an axial location where the valve needle begins to taper.

28. (Previously Presented) The valve of claim 27 wherein the cross-sectional area of the curved inlet passage starts adjacent to the inlet piping, the cross-sectional area of the curved inlet passage configured to generate a gas flow path that is eccentric to the inlet piping, the gas flow path immediately adjacent to the inlet passage being as far away as possible from an outlet flange.

29. (Original) The valve of claim 27 wherein the cross-sectional area of the curved inlet passage is shaped such that the radius of curvature measured orthogonal to flow direction is smaller on the side of the flow path that has a smaller radius of curvature measured parallel to the flow direction than the side of the flow path that has a larger radius of curvature measured parallel to the flow direction.

30. (Original) The valve of claim 27 wherein the cross-sectional area of the curved inlet passage has an approximately elliptical shape.

31. (Currently Amended) The valve of claim 27 wherein the fuel outlet has a diffuser that is shaped such that the area gradient of the diffuser increases from an initial start position near the sloped nozzle throat to a maximum value and drops to near zero at a boundary of the fuel outlet.

32. (Currently Amended) The valve of claim 31 wherein an inner diameter of the initial start position is smaller than the inner diameter of the sloped nozzle throat, the initial start position being downstream of the sloped nozzle throat.

33. (Currently Amended) The valve of claim 27 further comprising a converging contoured restriction between the sloped nozzle throat and the curved inlet passage.

34. (Currently Amended) The valve of claim 33 wherein the converging contoured restriction is shaped such that the area gradient of the converging contoured restriction starts at near zero and becomes increasingly negative as the converging contoured restriction nears the sloped nozzle throat.

35. (Currently Amended) A valve comprising:

an inlet adapted to connect to an inlet pipe, the inlet having a curved inlet passage;

a nozzle area in fluid communication with the inlet passage, the nozzle area having a sloped nozzle throat and ~~a~~ an uninterrupted annular converging contoured restriction upstream of the sloped nozzle throat, the sloped nozzle throat having surfaces tangent to a direction of fluid flow to inhibit flow separation;

an outlet in fluid communication with the sloped nozzle throat, the outlet having a diffuser that is shaped such that the area gradient of the diffuser increases from an initial start

position near the sloped nozzle throat to a maximum value and drops to near zero at a boundary of the outlet; and

a valve needle adaptable to move between a closed position in contact with the sloped nozzle throat and an open position away from the sloped nozzle throat, the valve needle having a nearly cylindrical area upstream of an axial location where the valve needle begins to taper to provide the flow versus stroke characteristic of the valve body

36. (Original) The valve of claim 35 wherein the nearly cylindrical area has a length to diameter ratio of one of approximately equal to one and less than one.

37. (Currently Amended) The valve of claim 35 wherein the converging contoured restriction is shaped such that the area gradient of the converging contoured restriction starts at near zero and becomes increasingly negative as the converging contoured restriction nears the sloped nozzle throat.

38. (Currently Amended) The valve of claim 35 wherein an inner diameter of the initial start position is smaller than the inner diameter of the sloped nozzle throat, the initial start position being downstream of the sloped nozzle throat.

39. (Previously Presented) The valve of claim 35 wherein the cross-sectional area of the curved inlet passage starts adjacent to the inlet piping, the cross-sectional area of the curved inlet passage configured to generate a gas flow path that is eccentric to the inlet piping, the gas flow path immediately adjacent to the inlet passage being as far away as possible from an outlet flange.

40. (Original) The valve of claim 35 wherein the cross-sectional area of the curved inlet passage is shaped such that the radius of curvature measured orthogonal to flow direction is smaller on the side of the flow path that has a smaller radius of curvature measured parallel to the flow direction than the side of the flow path that has a larger radius of curvature measured parallel to the flow direction.

41. (Original) The valve of claim 35 wherein the inlet is adapted to connect to an inlet pipe having a cross-sectional area and wherein the inlet passage has a cross-sectional area at a location adjacent the inlet that is smaller than the cross-sectional area of the inlet pipe.

42. (Original) The valve of claim 35 wherein the diffuser extends beyond an outlet flange of the outlet.

43. (Original) The valve of claim 35 wherein an initial length of an outlet pipe connected to the diffuser has a smaller inner diameter than the outlet pipe inner diameter, thereby extending the diffuser.

44. (Original) The valve of claim 35 further comprising an outward step in the converging contoured restriction for allowing a misalignment between machining operations.